**ABSTRACT:**

**BACKGROUND & OBJECTIVES:**

The aim of this study is to find out the relationship between level of serum magnesium and diabetic foot ulcer grades. The objectives are to assess the incidence of hypomagnesemia in diabetic foot ulcer patients with Type 2 DM. To evaluate the relation of hypomagnesaemia to various grades of diabetic foot ulcer as per Wagner grading in patient with Type 2 DM.

**METHODOLOGY:**

- This study is conducted in 105 patients who are admitted in

Department of General Surgery in Government Rajaji Hospital, Madurai, Tamil Nadu, between JAN,2016 and AUG,2016 with Type II DM with diabetic foot are studied

- A detailed history and clinical examination is recorded in all study groups
- Diabetic foot ulcers are graded using Wagner classification.
- Venous blood sample collected after overnight fasting in all diabetic foot patients for serum magnesium.
- Serum magnesium level done by using colorimetric method.
- Serum magnesium level is correlated with various grades of diabetic foot ulcer.

**RESULTS:**

105 cases were taken up for this study. Among them two cases lost follow up. One case died due to Myocardial infarction. So, as a whole 102 cases were studied and analyzed.

SERUM MAGNSEIUM AND WAGNER GRADING

| Serum Magnesium Level (in mg) | Wagner Classification of diabetic foot ulcer | | | | | p-value |
|---|---|---|---|---|---|---|
| | One | Two | Three | Four | Five | |
| <1 | - | 3 (8.6%) | 1 (3.1) | 4 (28.6) | 7 (100.0) | <0.001 |
| 1 – 1.3 | - | 7 (20.0%) | 19 (59.4) | 9 (64.3) | - | |
| 1.4 – 1.6 | 6 (42.9) | 14 (40.0) | 9 (28.1) | - | - | |
| >1.6 | 8 (57.1) | 11 (31.4) | 3 (9.4) | 1 (7.1) | - | |
| Total | 14 (100.0) | 35 (100.0) | 32 (100.0) | 14 (100.0) | 7 (100.0) | |

Serum magnesium deficiency classified as Mild (1.4-1.6), Moderate (1-1.3), severe (<1). From table, it is evident that severe Hypomagnesemia cases have grade 5 diabetic foot. Serum magnesium level has negative correlation with diabetic foot grading which is statistically significant (p value is 0.001).

**As the deficiency of Magnesium increases, severity of Diabetic foot grade also increases.**

## CONCLUSION:

It is concluded that

- Hypomagnesaemia is a one of the most important contributing factor in diabetic foot patients.
- This study shows that there is a relationship between the level of magnesium and severity of diabetic foot ulcer.
- As available information suggests that adverse outcomes are associated with hypomagnesaemia. It is prudent that magnesium levels are to be monitored in diabetic foot patients.
- Further studies on the role of magnesium supplementation in type 2 diabetes in wide population are recommended to avoid further amputations and limb impairment.

**KEYWORDS:**

Hypomagnesemia , Diabetic foot, Wagner's classification